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**ASSOCIATION, INC.
Yosemite, CALIFORNIA**

Guide to the

MARIPOSA GROVE NATURE TRAIL

YOSEMITE NATIONAL PARK



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The Mariposa Grove Nature Trail

Yosemite National Park

By Richard Wason
Ranger-Naturalist



IN COOPERATION WITH THE NATIONAL PARK SERVICE.

This self-guiding nature trail is for your enjoyment. Along the trail you will find numbered stakes at locations where some object of natural interest can be observed. The numbered paragraphs in this pamphlet correspond to the stakes and describe the features.

YOSEMITE

Nature Notes

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Stagecoach on Fallen Monarch.

—J. C. Boyesen

Young Sequoias. This is a group of young giant sequoias, just a few many thousand in the Mariposa Grove. The giant sequoia reproduces by means of tiny seeds of which only a small percentage are fertile, and most of these fall in locations where sprouting is impossible. Also, most of the seedlings that appear do not survive infancy. Hence many millions of seeds are produced for each one that becomes a tree. In spite of this, the Mariposa Grove seems to be holding its own, young trees appearing in sufficient number to replace the fallen veterans.

2. Metamorphic Rocks. While the rock comprising the Sierra Nevada is largely granite, masses of metamorphic rock, (rock changed by heat and/or pressure), can also be found, especially in the foothill region and at the crest of the range. Such rocks are the altered remains of ancient ocean sediments: sands, clays and limy deposits. Between the foothills and the Sierra crest most of the formerly complete blanket of metamorphic rocks has been eroded away — this outcrop being one of the scattered remnants.

3. True Mosses. The mound to the left of the trail at this point is partially covered by a mat of moss. True mosses are simple green plants that lack woody tissue and hence are always relatively low and insignificant. Most mosses prefer damp locations, though some may be found growing on the dry surfaces of nearly barren rocks.

4. Fallen Giant Sequoias. Their roots well supplied with moisture in this meadow, these giants grew quite rapidly, the largest being only about eight hundred years old when it fell. In addition to causing rapid growth, the wet situation may also have protected them from serious fire damage. On the other hand, the nature of their location probably contributed to their downfall — the shallow root systems being unable to keep the tree erect in the loose moist soil. What actually made the trees fall to earth can only be guessed. It may have been a heavy load of snow, an unbalanced crown (tree top) produced by loss of branches from one side, or a windstorm.

5. Birds in Mariposa Grove. Here is a good spot to pause and watch the bird life of this meadow. One of the most common birds here is the Oregon junco, a small sparrow-like bird with a dark hood, pinkish bill, and white outer tail feathers. Over thirty other species have been reported from this meadow during the summer months. Among the most abundant forms are the western robin, the white-headed woodpecker, and the tiny sierra creeper.

6. Plant Succession. Notice the grey and yellowish-green areas on the surface of this boulder. They are colonies of lichens (pronounced ly-kens)—primitive pioneer plants that act, through their growth and decay, as initial living agents in the slow formation of soil from barren rock. Remains of lichens, dust trapped by the plants, and minute rock particles eventually accumulate as a thin layer of new soil—enough to support the growth of somewhat more complex plants. Notice the dark clumps of true mosses that are beginning to appear. If the ever increasing quantity of soil is not removed by erosive forces, an amount sufficient for the needs of a still greater variety of plants will accumulate. This series of events, where one kind of plant prepares the way for another, is called plant succession.

7. Squirrels. Can you find two evidences of the activity of tree squirrels in this vicinity? Note the large number of chewed giant sequoia cones on the ground near the fallen and burned tree. The seeds extracted from such cones supply one of the important foods for the Douglas tree squirrels or chickarees. Also the young giant sequoia tree closer to the trail shows evidences of having been used as a source of nesting material. Note how the fibrous bark has been torn off — to be used for lining nests in tree cavities. Other members of the rodent (gnawing family that you may meet here in the grove are the golden mantled ground squirrel, (looks like a large chipmunk without stripes on his head), the sierra ground squirrel, (larger and gray), and two forms of chipmunk



—H. D. Wheeler

Oregon Junco (*Junco oreganus*)



—R. G. Beidleman

Golden-mantled Ground Squirrel (*Citellus lateralis chrysodeirus*)

8. White Fir. True firs are among the most abundant of all cone-bearing trees in this region. Yosemite has two such trees, (not counting the so-called Douglas-fir, which is not a true fir.) The white fir is most common through the yellow pine belt and is gradually replaced at higher elevations by the magnificent red fir. Because of their symmetry and attractive foliage, young trees of both types are widely used as Christmas trees, but are never cut for this purpose in national parks.

9. Ponderosa Pine. The ponderosa or western yellow pine is one of the most widespread and valuable of all conifers in North America. The ponderosa pine is often difficult to distinguish from a very similar 3-needled pine, the Jeffrey. Jeffrey pine cones are larger, and the bark of the tree has a characteristic vanilla-like odor. More typical ponderosa pines may be seen on the roadside between here and the Grizzly Giant, and Jeffrey will be found usually at higher elevations as at Wawona Point or Glacier Point.

10. The Iowa Tree. This giant sequoia fell in the late winter of 1954. Like the Iowa, most of our recently fallen sequoias have been roadside trees. There seems to be little doubt that the building of and use of roads in the Mariposa Grove has so compacted the soil as to injure or kill roots, and thus hasten the falling of the trees. Because of this, and other forms of "human erosion", it may soon become necessary to restrict or eliminate automobile travel in the grove. (The nature trail turns to the right at this point.)

—M.B.N.



Sugar Pine. The most common tree in this vicinity is the sugar pine. These, with one exception, have their long leaves grouped in bundles of two or more, enclosed at the base in a papery sheath. Those commonly having five needles in a bundle are referred to as white pines, the sugar pine being one of three such species in Yosemite. Characteristic features of these largest of all pines are the long horizontal branches of mature trees, and the very large cones, which may be upwards of two feet in length.

Staghorn Lichen. The yellow-green plant seen growing on many trees in this vicinity is staghorn lichen and not a moss, as it is often called. A lichen is really a composite plant — a combination of a fungus and an alga, (a simple green plant), living together in a mutually beneficial partnership. The alga is capable of making food from substances in the atmosphere, so staghorn lichens need no nourishment from the trees on which they grow, and are not parasitic. These lichens are not too tolerant of snow; therefore you can tell the average snow depth by how high they start growing up the tree trunk from the ground.

Decay of Sequoia Wood. This condition of a fallen sequoia trunk may have been lying in this position for a century — perhaps longer. The wood of the giant sequoia, (like its relative, the coast redwood), is very resistant to decay. Dead trees of other species disintegrate relatively quickly through the action of fungi, bacteria, and insects, their remains becoming part of the forest soil. This is part of nature's plan for maintaining life in the forest, and the National Parks are dedicated to preserving the natural scene. Fallen trees in a National Park are left where they fall,

except when they constitute a hazard or inconvenience to man. For the same reason, park regulations prohibit the carving of initials in living or dead trees, the feeding of deer and bear, the removal of any natural objects, and the improper disposal of trash. Help us keep Yosemite as nature intended.

14. Gooseberry and Sugar Pine.

The small shrub in the foreground is a wild gooseberry. Behind it grows a young sugar pine. These two plants are potential indirect enemies, being alternate hosts to a fungus disease called white pine blister rust. This disease is destructive to all five-needled pines, but can be controlled by removal of shrubs of the genus *Ribes*, thus interrupting the life cycle of the disease, and keeping it from spreading. A *Ribes* eradication program has been carried on in the sugar pine areas of Yosemite National Park for several years on a prevention basis. This gooseberry would be removed immediately if and when it showed any evidence of the disease.

15. The Window Tree. The short side trail to the left from this point brings you to the foot of the Window Tree. Here you can see how a giant sequoia is healing a severe fire wound. Notice how the burly growth has joined across the middle of what was formerly a large vertical scar, leaving an open "window" at the top. Eventually this window, as well as the "front door" at ground level will be sealed over. In part, the giant sequoia owes its longevity to its ability to both withstand and recover from damage by fire. Most of the mature sequoia trees have been subjected to scores of forest fires, yet very rarely is one killed by this serious enemy. (Retrace your steps to the main trail.)

16. Survival of the Fittest. Many things, besides fire, work against the survival of forest trees. Man's need for wood, insect infestation, and the ravages of fungus diseases present serious problems. As if those weren't enough, some trees, like this young white fir, have still other problems. It has been competing for space, water and minerals, not only with the large sugar pine behind it, but also with a giant sequoia whose long-probing roots can be seen curving around the base of its trunk. Nearer the top of the tree a hungry porcupine has done considerable damage and, if you look carefully, you may see still another tree enemy — clumps of the parasitic fir mistletoe. Trees, then, are engaged in a constant struggle for survival, and those species best equipped to combat fire, insects, disease and other forest enemies are the ones to live the longest. Thus the giant sequoias, having been spared

from the ax by far-sighted men, and protected by their own nature from other enemies, have become one of the oldest living things in the world.

17. Deer and Deerbrush. This low spiny shrub is one of several types of *Ceanothus* or deerbrush found in Yosemite, most of which serve as a natural food for Yosemite's deer. The park regulation prohibiting the feeding of deer has been made for the good of both the visitor and the animals. Sandwiches, potato chips, and other human foods are not part of the normal diet of deer. When fed to animals it contributes to their becoming diseased beggars and eventually to their death. Also, the feeding or petting of deer has resulted in serious injuries to visitors. The animals here are not playthings, and their hooves and antlers are most effective and dangerous when they choose to use them.

California Mule Deer (*Odocoileus hemionus californicus*)

—N.P.S.





—N.P.S.

Galen Clark's cabin, Mariposa Grove.

19. The Four Guardsmen. You will note that these four giant sequoias are growing in a nearly-perfect straight line. The reason for this is not known for sure, but a possible explanation is that many centuries ago a tree fell along this line, and underneath the fallen trunk tree squirrels buried giant sequoia cones for winter storage. Of the many thousands of seeds thus brought in contact with mineral soil, four managed to sprout, weather the critical early years, and become these four giants of today. What's your theory?

tendency of these trees to develop large basal buttresses which seem to help balance and support the trunk. Small animals have been seen on these buttresses, taking "bark baths" in the bits of bark that have accumulated there. It is assumed that the little animals have discovered the insecticidal properties of this material—the same properties that have protected giant sequoias from insect infestation through the centuries.

20. The Lafayette Tree. The large giant sequoia a short distance from the trail on this side has been named the Lafayette. It shows very well the

20. The End. We hope that you have enjoyed your walk on the Mariposa Grove Nature Trail. Please replace this pamphlet in the box so that it may be used by others or drop 15 cents in coin slot. Thank you, and have a pleasant trip.

CHRONOLOGICAL HISTORY OF THE MARIPOSA GROVE

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 450 A. D. Fire. | 1885 State Board of Commissioners built a cabin as replica of Galen Clark's old one. |
| 1652 Fire. | 1889 Fire threatens grove. |
| 1690 Fire. | 1895 Tunnel cut in California Tree (near Grizzly Giant). |
| 1710 Fire. | 1902 Old cabin enlarged to accommodate curio shop. |
| 1742 Fire. | 1906 Mariposa Grove and Yosemite Valley re-ceded to United States. U. S. Army administered the areas. |
| 1803 Fire. | 1914 Civilian employees replaced Army in administration of park. |
| 1809 Fire. | 1916 National Park Service established by Act of Congress. |
| 1842 Fire. | 1927 Massachusetts Tree fell. |
| 1849 Major Burney and John Macaulay report Big Trees east of Chowchillas. | 1930 Present museum constructed as replica of former cabin. |
| 1857 Galen Clark discovered and explored the Mariposa Grove. | 1932 Road rerouted around the Grizzly Giant. |
| 1862 Fire. | 1934 Stable Tree fell August 28. |
| 1864 Grove and Yosemite Valley became a California State Park. Galen Clark made guardian of the grove and Yosemite Valley. | 1934 More than 15,000 seedlings and saplings counted in north section of the grove. |
| 1868 John Muir made his first visit to Yosemite. | 1935 Utah Tree fell April 7th. |
| 1873 Fallen Giant fell. | 1943 Mark Twain Tree fell. |
| 1881 Tunnel cut through Wawona Tree by Yosemite Stage and Turnpike Co. at a cost of \$75.00. | 1954 Iowa Tree fell. |



Snow-mantled Grizzly Giant

—*Ralph H. Anderson*



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Upper Yosemite Fall through Black Oaks.

—Ralph Anderson

